migra SC/MC 5/3 Profinet

Large Format, Graphics Compatible Display with Profinet-Interface

User's Manual

FEMA ELECTRÓNICA®

Distribuidor en España :
FEMA ELECTRÓNICA, SA
Pol. Ind. Santiga – Altimira 14 (T14 N2)
08210 Barberà del Vallès – BARCELONA
Tel. 93.729.6004 – info@fema.es
Fax 93.729.6003 – w w w .fema.es

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

Index

1 GENERAL 3

2 PROFINET INTERFACE 3

2.1 Linking to a Profinet IO Controller 3

2.2 Transmission of the MIGRA frames 4

2.3 Examples 6

2.4 Configuration via RS232 8

3 CONNECTOR PIN ASSIGNMENTS 10

4 VERSIONS OVERVIEW 12

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

1 General

This display is based on the „migra SC/MC 5/3 Serial“, which is expanded by a Profinet interface.

The interface is used for the connection to a Profinet controller (PLC) at one side and the data exchange (RS485 frames) to the display.

The frames for the display correspond to those of the „serial MIGRA“ and are described in the **user's manual „migra SC/MC 5/3 Serial“**.

2 Profinet Interface

The internal interface is the „Anybus Communicator for PROFINET“ of the company HMS (AB7013-B). At the enclosed compact disc you can find the documentation and the necessary configuration software. Alternatively, you can find the files at the home page of HMS (www.anybus.com).

The connectors for the configuration (RS232) and the controlling via Profinet are accessible from the outside.

2.1 Linking to a Profinet IO Controller

The linking to the PLC of the Profinet side is described in the document „PROFINETIO_Slave_Step7_1.10.pdf“ (example for Siemens S7).

Alternatively, the IP address subnet mask etc. can be adjusted with the „IP-Config-Tool“ of HMS (compact disk).

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

2.2 Transmission of the MIGRA frames

The frames, which are described in the user's manual **„migra SC/MC 5/3 Serial“** („02 81 80 8X DATA-Unit 03“), must be entered in the **Profinet output data** as follows:

HMS memory address	Profinet output index	Content	Description
0x200	0	0	Control register HIGH: static 0!
0x201	1	0	Control register LOW: static 0!
0x202	2	XX	Trigger byte: The transmission of the frame is executed with an increasing by 1 value
0x203	3	6... 64	Length byte: frame length
0x204	4	0x02	MIGRA frame „STX“ (static)
0x205	5	0x81	MIGRA frame „DA“ (static)
0x206	6	0x80	MIGRA frame „SA“ (static)
0x207	7	0x80 or 0x81	MIGRA frame „FC“: 0x80 = „without response“, 0x81 = „with response“
0x208	8	XX	MIGRA frame „Data unit, 1st Byte“
0x209	9	XX	MIGRA frame „Data unit, 2nd Byte“
0x20A	10	XX	MIGRA frame „Data unit, 3rd Byte“
…	…	XX	…
0x208 + (n-1)	8 + (n-1)	XX	MIGRA frame „Data unit, nth Byte“
0x208 + n = max. 0x243	8 + n = max. 67	0x03	MIGRA frame „ETX” (static)

The length byte and the MIGRA frame must be entered first. Then, the trigger byte must be increased by 1 value.
Thereby, the entered frame is transmitted to the MIGRA.

If the controlling happens without response frame („FC“ = 0x80), the respectively next frame must be sent approx. 100 to 200 ms soonest!

If you use the response („FC“ = 0x81), the respectively next frame must be sent soonest after receiving the response!

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

A possible response appears in the **Profinet input data**:

HMS memory address	Profinet input index	Con-tent	Description
0x000	0	0x9F	Status register HIGH: without meaning!
0x001	1	0	Status register LOW: without meaning!
0x002	2	XX	Trigger byte: Is increased by 1 value after the reception of every response frame
0x003	3	6...23	Length byte: response length
0x004	4	0x02	MIGRA response „STX“ (static)
0x005	5	0x80	MIGRA response „DA“ (static)
0x006	6	0x81	MIGRA response „SA“ (static)
0x007	7	0x80	MIGRA response „FC“ (static)
0x008	8	XX	MIGRA response „Data unit, 1st Byte“
0x009	9	XX	MIGRA response „Data unit, 2nd Byte“
0x00A	10	XX	MIGRA response „Data unit, 3rd Byte“
…	…	XX	…
0x008 + (n-1)	8 +(n-1)	XX	MIGRA response „Data unit, nth Byte“
0x008 + n = max. 0x01A	8 + n = max. 26	0x03	MIGRA response „ETX” (static)

Note:
In many cases, you do not need the response frame!
The necessary frame intervals, which depend on the effort for the evaluation, can also be defined as an experiment.

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

2.3 Examples

1. The online text „microSYST“ shall be shown at the display (without response):

Profinet Output Data:

HMS memory address	Profinet output index	Content	Description
0x200	0	0	Control register HIGH: static 0!
0x201	1	0	Control register LOW: static 0!
0x202	2	x ↓ x+1	Trigger byte: The transmission of the frame is executed with an increasing by 1 value (**after** the entries in index 3...17 have been done!)
0x203	3	14	Length byte: frame length
0x204	4	0x02	MIGRA frame „STX“ (static)
0x205	5	0x81	MIGRA frame „DA“ (static)
0x206	6	0x80	MIGRA frame „SA“ (static)
0x207	7	0x80	MIGRA frame „FC“ (without response)
0x208	8	0x6D	= ‘m’
0x209	9	0x69	= ‘i’
0x20A	10	0x63	= ‘c’
0x20B	11	0x72	= ‘r’
0x20C	12	0x6F	= ‘o’
0x20D	13	0x53	= ‘S’
0x20E	14	0x59	= ‘Y’
0x20F	15	0x53	= ‘S’
0x210	16	0x54	= ‘T’
0x211	17	0x03	MIGRA frame „ETX” (static)

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

2. Variable 000 shall be set with the value „123“ (with response):

Profinet Output Data:

HMS memory address	Profinet output index	Con-tent	Description
0x200	0	0	Control register HIGH: Fest auf 0 !
0x201	1	0	Control register LOW: Fest auf 0 !
0x202	2	x ↓ x+1	Trigger byte: The transmission of the frame is executed with an increasing by 1 value (**after** the entries in index 3...16 have been done!)
0x203	3	13	Length byte: Frame length
0x204	4	0x02	MIGRA frame „STX“ (static)
0x205	5	0x81	MIGRA frame „DA“ (static)
0x206	6	0x80	MIGRA frame „SA“ (static)
0x207	7	0x81	MIGRA frame „FC“ (with response)
0x208	8	0x56	= ‘V’
0x209	9	0x3D	= ‘=’
0x20A	10	0x30	= ‘0’
0x20B	11	0x30	= ‘0’
0x20C	12	0x30	= ‘0’
0x20D	13	0x31	= ‘1’
0x20E	14	0x32	= ‘2’
0x20F	15	0x33	= ‘3’
0x210	16	0x03	MIGRA frame „ETX” (static)

Profinet Input Data:

HMS memory address	Profinet input index	Con-tent	Description
0x000	0	0x9F	Status register HIGH: without meaning!
0x001	1	0	Status register LOW: without meaning!
0x002	2	x ↓ x+1	Trigger byte: Is increased by 1 value after the reception of every response frame (**after** en-tries into index 3...9 have been done!)
0x003	3	6	Length byte: response length
0x004	4	0x02	MIGRA response „STX“ (static)
0x005	5	0x80	MIGRA response „DA“ (static)
0x006	6	0x81	MIGRA response „SA“ (static)
0x007	7	0x80	MIGRA response „FC“ (static)
0x008	8	0x30	MIGRA response „0“ (no error)
0x009	9	0x03	MIGRA response „ETX” (static)

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

2.4 Configuration via RS232

The interface is already pre-configured at the delivery. Normally, the customer does not have to do anything here!

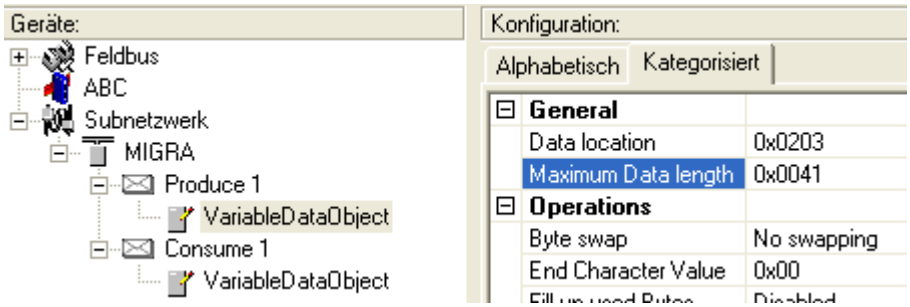
Anyhow, if there are any changes desired, it can happen with the Windows PC software „ABC Config Tool“ of HMS (at the compact disc). The connection between PC and interface must be done with a null modem cable (pin 2-3, pin 3-2, pin 5-5) with 9-pole SUB-D socket connector at both ends.

Start the „ABC Config Tool“ (after installation). Press the button „Cancel“ of the dialog „Konfiguration“. Open the file „HMS MIGRA.cfg“, which you can find at the compact disc.

The standard Profinet output data width is 68 bytes; the input data width is 27 bytes.
You can use any input/output width, which must be adjusted with the „ABC Config Tool“ then:

You can change the **Profinet output data width** with the entry field „Subnetzwerk/MIGRA/**Produce 1**/VariableDataObject/ Maximum Data length“.

It is: 3 + „Maximum Data length“ => Standard = 68 bytes.

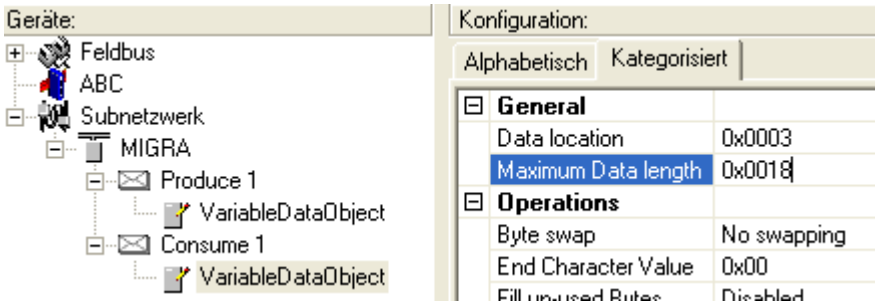


Note:
MIGRA frames must no be longer than 235 bytes!
=> „Maximum Data length“ ≤ 236 (= 0x00EC)
=> Profinet output data width ≤ 239 bytes.

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

You can change the **Profinet input data width** with the entry field „Subnetzwerk/MIGRA/**Consume 1**/VariableDataObject/ Maximum Data length“.

It is: 3 + „Maximum Data length“ => Standard = 27 bytes.



Note:
MIGRA response frames are currently not longer than 23 bytes!
=> „Maximum Data length“ = 24 (= 0x0018).
=> Profinet input data width = 27 bytes.

If you renounce the commands „ESC-D“ and „ESC-P“, the MIGRA response frames have a constant length of 6 bytes!

=> „Maximum Data length“ = 7 (= 0x0007).
=> Profinet input data width = 10 bytes.

Please do not change any other parameters in addition to the described ones! If you are not sure, contact the technical support of microSYST.

Please do the following steps in order to save the changed configuration:

Click the symbol „Verbinden“:

Click the symbol „Download zum ABC“.

After transmission is finished, click „Verbindung trennen“.

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

3 Connector Pin Assignments

RS232 connector of the MIGRA (Configuration and controlling the MIGRA):

9pol. Sub-D plug connector

Pin	RS232 (Standard)	RS485 (at displays with more the 64 pixels in height)
1	n.c.	n.c.
2	RxD	n.c.
3	TxD	Rx+ / Tx+
4	n.c.	n.c.
5	GND	GND*
6	n.c.	+5 VDC*
7	n.c.	n.c.
8	n.c.	Rx- / Tx-
9	n.c.	n.c.

*only if an external bus termination is needed.

RS232 connector of the HMS Profinet interface (Configuration of the Profinet interface):

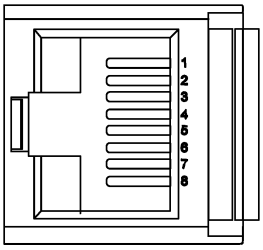
9pol. Sub-D connector

Pin	RS232 Plug Connector (Standard)	RS232 Socket Connector (original HMS cable)
1	n.c.	n.c.
2	RxD	TxD
3	TxD	RxD
4	n.c.	n.c.
5	GND	GND
6	n.c.	n.c.
7	n.c.	n.c.
8	n.c.	n.c.
9	n.c.	n.c.

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

Profinet connector of the HMS Profinet interface (Controlling the MIGRA via Profinet):

Profinet socket



Pin	Assignment
1	Tx +
2	Tx -
3	Rx +
4	n.c.
5	n.c.
6	Rx -
7	n.c.
8	n.c.

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de

4 Versions Overview

Version	Date	Description
1.00	05.03.2008	Nickl: Document created

Certified per **DIN EN ISO 9001:2000**

microSYST Systemelectronic GmbH, Zur Centralwerkstätte 10, DE-92637 Weiden
☎ +49 961 39166-0, 🖷 +49 961 39166-10, info@microsyst.de, www.microsyst.de